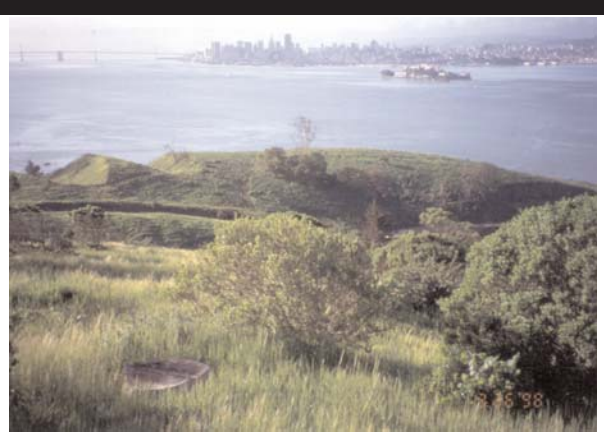
Project Case Studies



Angel Island
State Park

ANGEL ISLAND, OFTEN CALLED "the Ellis Island of the West", is historically significant as an immigration processing site, a WWII Prisoner of War camp, and a base for other military functions. Three thousand years ago, the island was a fishing and hunting site for the Coast Miwok people.

By the mid 1980s, there were approximately 86 acres of bluegum eucalyptus in the 740 acre park. From the 1870s to the 1930s, the military had planted small groves amounting to 24 acres. The original groves had expanded to more than three times their original size as new eucalyptus seedlings invaded native plant communities and began to dominate large portions of the landscape.

To preserve natural and cultural resources on Angel Island, the case for eucalyptus removal was strong, but the project was controversial. By 1996, after 10 years of planning for the project, 80 acres of eucalyptus removal was complete. An extensive environmental impact report had been prepared, and 6 acres of historically significant trees had been preserved. Active restoration work continues on the sites where trees were removed.

The first 16 acres of eucalyptus (3,800 tons) were removed by helicopter in 1990. With this method, ground disturbance was minimized and whole trees were removed, including limbs and branches. At the time, blue gum eucalyptus only had value for use in power generating plants, so the treatment costs were not subtantially offset by the value of the wood. After the trees were removed, the remaining woody debris and sections of tree butts resulting from stump lowering were piled and burned by Delta Conservation Camp inmate crews, under the supervision of California Department of Forestry and Fire Protection personnel.

There was no stable funding source to continue this expensive work. In 1993, however, California State Parks learned that a Japanese market for eucalyptus pulp chips was being developed which meant eucalyptus removal costs could be dramatically reduced. Under a contract with Planned Sierra Resources, tree removal resumed in the fall of 1995 using traditional logging methods. Skidding was done primarily with rubber-tired grapple skidders. Logs were transported from the island on a WWII Navy vessel equipped with a ramp for loading and unloading from a beach. This barge held 1,500 tons of logs. Unfortunately, it was damaged by contact with rocks on its first load. Bottom repairs allowed its continued use as a barge, but beach loading was not possible. Instead, loading was done with a derrick barge moored to a sea wall on the east side of the island. The derrick barge was moved by tugboat to the island. Only logs were barged. The slash was piled by a tractor-mounted brush rake into 235 large piles, an estimated 14,000 cubic yards of woody debris.

Special felling methods were used on trees growing near historic structures. These trees were climbed and figged, allowing the direction of the fall to be controlled by a tractor. Stumps were kept low and were generally cut at the same angle as the slope of the surrounding terrain. Garlon 4 herbicide (80% with oil) was applied to the outside circumference of the stumps. Trees less than 5 inches in diameter were felled by a separate contractor who reapplied the same herbicide mixture several times to stumps continuing to resprout.

In the final phase, approximately 24,000 tons of logs were removed, and slash piles were burned. Inmate crews from San Quentin State Prison stacked remaining slash, and the clean-up went on for several months. Expansive views of Golden Gate Bridge, San Francisco, and the East Bay are again available to park visitors, and the success of the restoration effort has been very encouraging Native grasses and shrubs have recolonized the sites and non-native plant control efforts have been effective. The changes have been dramatic and demonstrate that landscapes which have been converted to eucalyptus can be restored back to quality natural areas.

Dave Boyd
California State Parks

Highway One
Point Reyes National Seashore

THE HIGHWAY ONE FIRE MANAGEMENT UNIT CONTAINS 2,874 ACRES, EXTENDING ALONG A BUSY traffic corridor between the communities of Olema and Bolinas, where the chance of vehicle related ignition is high. There are 94 acres of eucalyptus in this unit, 25 of which were treated in 2005 to reduce hazardous fuel.

The groves in the Olema Valley developed from individual trees which were historically planted in rows along roads and along property boundaries. The Highway One eucalyptus project involves thinning stands on both the east and west sides of the highway and is part of the more comprehensive Highway One Fuelbreak. Younger trees, 18" in diameter and less, are being removed in phases, beginning with the smallest (up to 5 inches in diameter) and progressing to larger trees. The cut trees are piled and chipped, and the stumps are chemically treated to prevent resprouting. During the first year of the project, 6,000 eucalyptus trees were removed in the area known as 13 Curves.

Crews from the Marin Conservation Corps, a local environmemtal service organization, cut the smaller trees. The larger trees were removed by the Point Reyes National Seashore Fuels Crew. The California Exotic Plant Management Team, a National Park Service task force dedicated to reducing the spread of invasive species, coordinated the application of herbicide to the cut stumps.

Work will be ongoing within the Highway One eucalyptus groves. The project site has also been used for training exercises by Marin County Fire Department and the National Park Service during the Wildland Fire Chainsaws class. This class is instructed as a refresher every year to ensure crew safety during tree removal operations.

Once ignited, a fire can spread quickly through a eucalyptus grove. Groves along roadways where many accidental fires start are a high priority for hazardous fuel reduction.